

RESEARCH ON THE ACTIVE COMPOUNDS IN WALNUT LEAF EXTRACT FROM SUCEAVA AREA - ROMANIA

CERCETĂRI PRIVIND COMPUȘII ACTIVI DIN EXTRACTUL DE FRUNZE DE NUC din zona Sucevei - ROMÂNIA

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Keywords: leaves, common walnut (*Juglans Regia L.*), chlorophyll, juglone, mineral salts

Abstract. The research was carried out on the leaves of common walnut (*Juglans Regia L.*) from Suceava area, Romania. The content of chlorophyll types, juglone and mineral salts in alcoholic extracts of walnut leaves was studied.

Cuvintele-cheie: frunze, nuc comun (*Juglans Regia L.*), clorofila, juglona, săruri minerale

Rezumat. Cercetările au fost efectuate, pe frunzele de nuc comun (*Juglans Regia L.*) din zona Sucevei, România. The content of the types of chlorophyll, juglone and mineral salts from the alcoholic extracts of walnut leaves at different growth stages was studied.

The walnut is and remains a tree of interest that cannot be overlooked. In addition to the economic potential, the benefits of consuming walnut fruits are very important. Strong antioxidant activity is the main feature resulting from the consumption of the seeds. Our research focused on the variations in the composition of metabolites associated with antioxidant activity during walnut ripening, namely: chlorophyll and juglone (Strugstad, M.P., Despotovski S (2012)).

The alcoholic extracts of the leaves, in their chemical characterization, showed that they are a rich source of phenolic compounds. Juglone is one of these compounds, which is found throughout the morphological structure of the walnut, except for the fruit. This substance has come to the attention of researchers because its uses are multiple and its action on other plants can be beneficial (Masek A, *et. al.* (2019)).

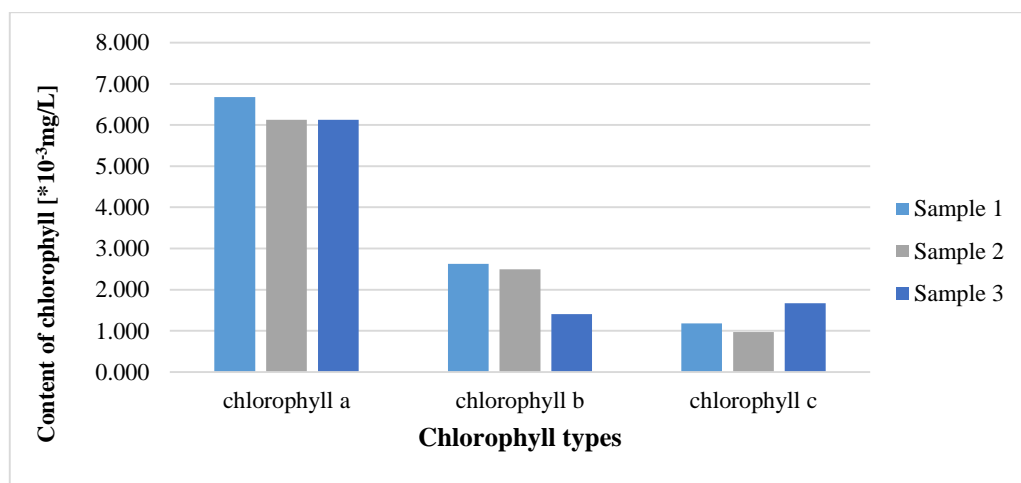


Fig. 1. The content of chlorophyll types in samples of alcoholic extract of walnut leaves

Figure 1 shows that the content of chlorophyll a in all three samples is higher than the content of chlorophyll b and c. However, chlorophyll a is in the highest at the beginning of the growing season, namely in the small nut phase of the three analyzed stages. There is a slight increase in chlorophyll c in sample 3, which is in the fallen walnut stage of growth, compared to chlorophyll c in sample 1 - with small walnuts and sample 2, which is in the mature green walnuts stage of growth.

For chlorophyll types b and c both in samples 1 and 2, very small quantitative differences are noted.

The polyphenol content calculated as the sum of the concentrations of the three types of

chlorophylls is significantly higher for sample 1 at the beginning of the growing season, namely in the small nut phase, figure 2, while the differences are insignificant for samples 2 and 3 (mature green and fallen nut phase, respectively).

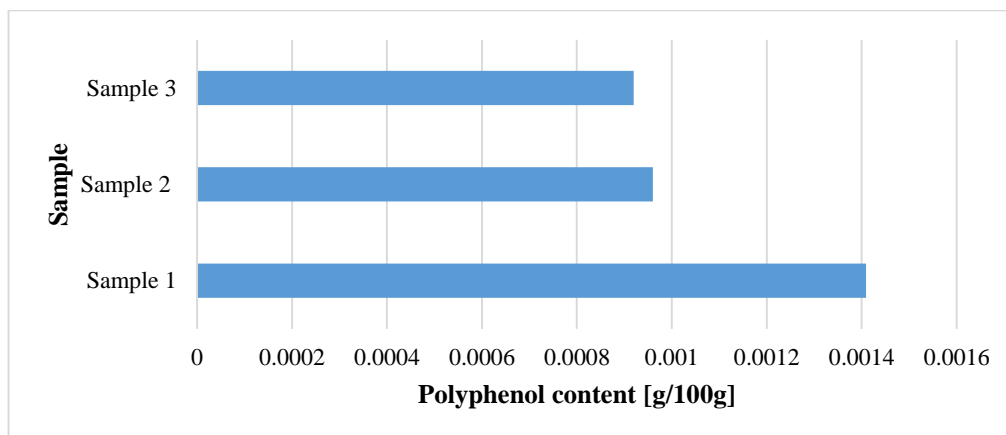


Fig. 2. The content of polyphenols in samples of alcoholic extract of walnut leaves

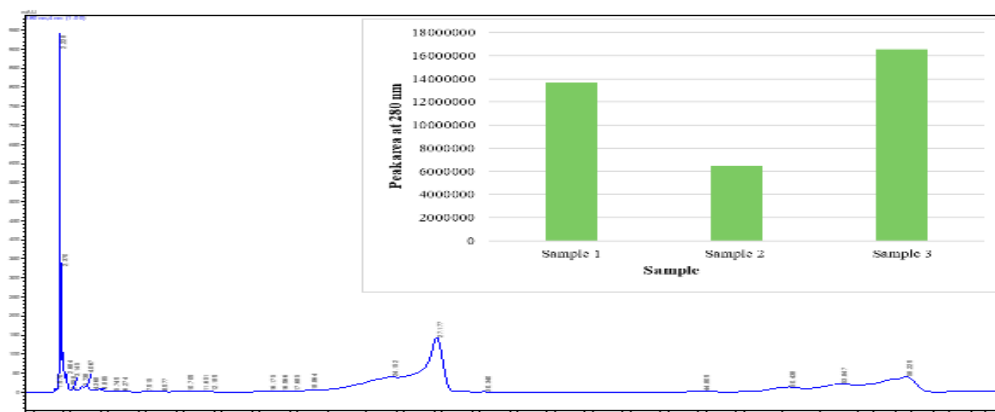


Fig. 3. Sample 1 Juglone Chromatogram from and peak area at 280 nm (Soto-Maldonado C *et. al.* (2019), for the samples of alcohol extract of walnut leaves

CONCLUSIONS

The polyphenol content is significantly higher for the early vegetative leaf stage, namely in the small nut stage, while in the nut-free vegetative stage (at the end of the walnut growing season) the content of walnut leaves has the highest juglone content. This period would be the most beneficial for the use of walnut leaves in the extraction of the compound with so many beneficial properties - juglone and the valorization of the waste resulting from the walnut cultivation.

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